

# HSB100-6

**SemiHow**  
Know-How for Semiconductor

# HSB100-6

**Sensitive Gate  
Silicon Controlled Rectifiers**

$$V_{DRM} = 400V$$

$$I_{T(RMS)} = 0.8A$$

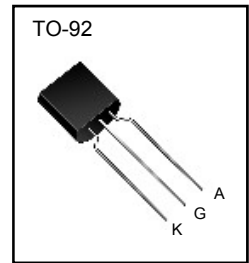
**Features**

- Repetitive Peak Off-State Voltage : 400V
- R.M.S On-State Current( $I_{T(RMS)}$ )=0.8A
- Low On-State Voltage (1.2V(Typ.)@ ITM)



**General Description**

PNPN devices designed for high volume, line-powered consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing and detection circuits. Supplied in an inexpensive plastic TO-92 package which is readily adaptable for use in automatic insertion equipment.



**Absolute Maximum Ratings** TC=25°C unless otherwise specified

Symbol	Parameter	Value	Units
$V_{DRM}$	Repetitive Peak Off-State Voltage	400	V
$I_{T(RMS)}$	R.M.S On-State Current (All conduction angles)	0.8	A
$I_{T(AV)}$	Average On-State Current (Half Sine Wave : $T_C=74^\circ C$ )	0.5	A
$I_{TSM}$	Surge On-State Current (1/2 Cycle, 60Hz, Peak, Non Repetitive)	10	A
$I^2t$	Circuit Fusing Considerations (t=8.3mS)	0.415	A <sup>2</sup> s
$P_{GM}$	Forward Peak Gate Power Dissipation ( $T_a=25^\circ C$ )	0.1	W
$P_{G(AV)}$	Forward Average Gate Power Dissipation ( $T_a=25^\circ C$ , t=8.3mS)	0.01	W
$V_{RGM}$	Reverse Peak Gate Voltage	5	V
$I_{FGM}$	Forward Peak Gate Current	1	A
$T_{STG}$	Storage Temperature Range	-40 ~ 125	°C
$T_j$	Operating Junction Temperature	-40 ~ 125	°C

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## Electrical Characteristics (Ta=25°C)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
I <sub>GT</sub>	Gate Trigger Current <sup>(1)</sup>	V <sub>AK</sub> =7V, R <sub>L</sub> =100Ω			200	μA
V <sub>GT</sub>	Gate Trigger Voltage <sup>(1)</sup>	V <sub>AK</sub> =7V, R <sub>L</sub> =100Ω, Ta=25°C V <sub>AK</sub> =7V, R <sub>L</sub> =100Ω, Ta=-40°C			0.8 1.2	V V
V <sub>GD</sub>	Non Trigger Gate Voltage	V <sub>AK</sub> =12V, R <sub>L</sub> =100Ω, T <sub>C</sub> =125°C	0.2			V
I <sub>H</sub>	Holding Current	V <sub>AK</sub> =12V, Gate open, Initiating current=50mA, Ta=25°C Ta=-40°C		2	5 10	mA mA
I <sub>DRM</sub>	Repetitive Peak Off-State Current	V <sub>AK</sub> =V <sub>DRM</sub> OF V <sub>RRM</sub> , T <sub>C</sub> =25°C V <sub>AK</sub> =V <sub>DRM</sub> OF V <sub>RRM</sub> , T <sub>C</sub> =125°C			10 200	μA μA
V <sub>TM</sub>	Peak On-State Voltage <sup>(2)</sup>	I <sub>TM</sub> =1A, Peak		1.2	1.7	V

<sup>(1)</sup> R<sub>GK</sub> Current is not included in measurement

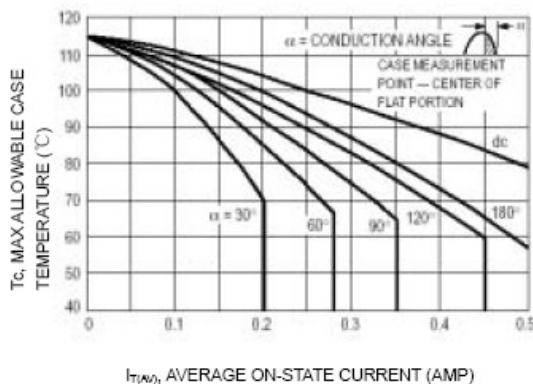
<sup>(2)</sup> Forward current applied for 1ms maximum duration, duty cycle ≤ 1%

## Thermal Characteristics

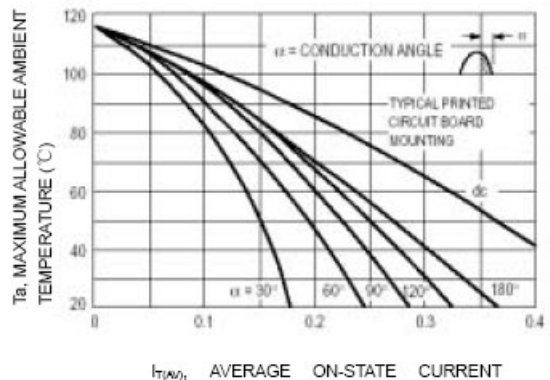
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
R <sub>TH(J-C)</sub>	Thermal Resistance	Junction to Case			1.3	°C/W
R <sub>TH(J-A)</sub>	Thermal Resistance	Junction to Ambient		60		°C/W

## Performance Curves

**Fig 1. HSB100-6 Current Derating (Reference : Case Temperature)**

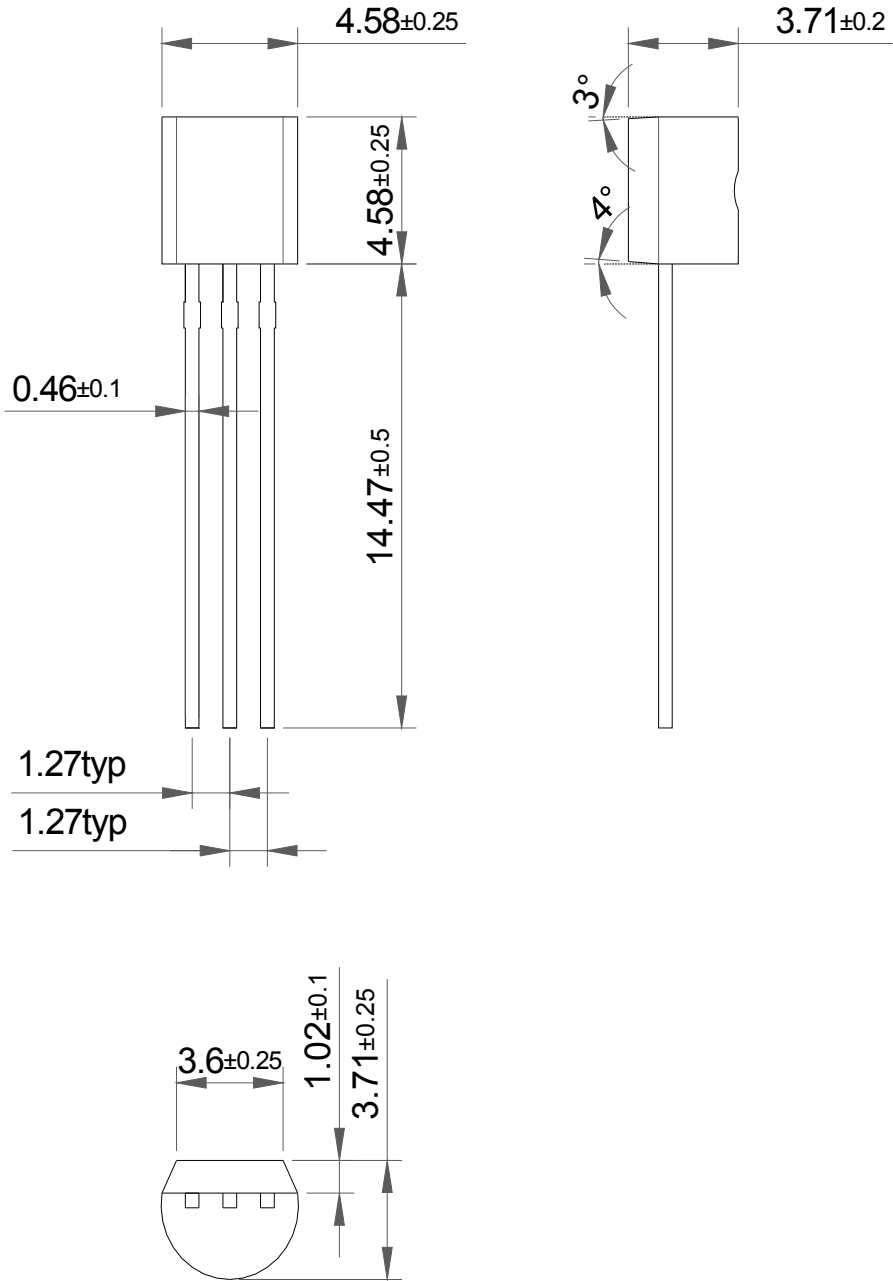


**Fig 2. HSB100-6 Current Derating (Reference : Ambient Temperature)**



Package Dimension

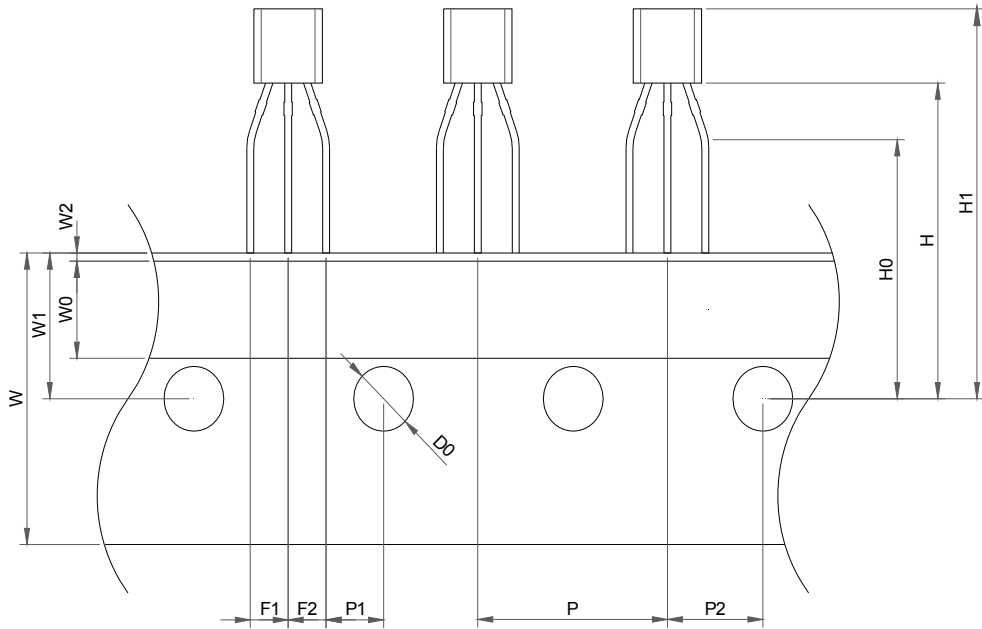
TO-92



Dimensions in Millimeters

Package Dimension

TO-92 TAPING



Item	Symbol	Dimension [mm]	
		Reference	Tolerance
Component pitch	P	12.7	±0.5
Side lead to center of feed hole	P1	3.85	±0.5
Center lead to center of feed hole	P2	6.35	±0.5
Lead pitch	F1,F2	2.5	+0.2/-0.1
Carrier Tape width	W	18.0	+1.0/-0.5
Adhesive tape width	W0	6.0	±0.5
Tape feed hole location	W1	9.0	±0.5
Adhesive tape position	W2	1.0 MAX	
Center of feed hole to bottom of component	H	19.5	±1
Center of feed hole to lead form	H0	16.0	±0.5
Component height	H1	27.0 max	
Tape feed hole diameter	D0	4.0	±0.2